Alabama s Forest Health Checkup

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FORESTS dominate the landscape of Alabama. Sixty-eight percent of the land is forested—some 21.9 million acres. These forested acres are diverse—hardwood forests presently count for the largest share of Alabama's timberland base, 45.7 percent. Only 16 percent of Alabama's forest is planted pine. These forestlands are owned by over 214,000 individual private landowners. These forested acres are important to the citizens of the state because they provide clean air and water, wildlife habitats, recreational opportunities, and wood for lumber, pulp, and fuel. Forest industry accounts for 67,000 jobs in Alabama.

Forest Health Monitoring

Because forests are critical for both economic and social benefits in Alabama, the health of the forests is important. In 1991 the state of Alabama joined the national Forest Health Monitoring program. Forest Health Monitoring is designed to annually collect, analyze, interpret, and report on the condition of all forests in the United States. The basis for Forest Health Monitoring is a set of detection plots distributed on a systematic grid across the entire state. These plots are visited annually and sets of core measurements are taken.

Measurements on the Forest Health Monitoring detection plots include many major groups or indicators. These indicators are mensuration (including tree growth, mortality, and regeneration); tree crown conditions; tree damage symptoms; ozone; soil characteristics and chemistry; and lichen communities and populations, which are useful in characterizing air pollution exposure.

Mensuration provides a record of stand dynamics: growth, mortality, and regeneration. Mensuration is also used to quantify each site in terms of stand variables, such as forest types, stand age, size class, stand density, and disturbance history. Finally, mensuration provides the basic framework for all other indicators, a description of each detection plot, and it ties the FHM plots to the larger set in Forest Inventory and Analysis (FIA) plots.

Tree crown condition rating quantifies tree vigor by assessing the visible conditions of each tree–amount of crown dieback, foliage condition, or transparency, and crown density. Tree damage symptom assessments provide a record of visible damage that may affect the ability of a tree to survive.

Additionally, tree damage symptoms can be used in many cases to determine the presence of certain insects and diseases on a plot.

Ozone is an air pollutant found in the lower atmosphere formed from gases released from automobile engines and various industrial processes. Plants that are sensitive to ozone (evidenced by visible injury) are referred to as bioindicators. Ozone bioindicator plants are evaluated on or near the detection plot for the presence of ozone injury symptoms. Plants that have shown to be sensitive to ozone are blackberry, black cherry, yellow poplar, sassafras, and sweetgum. The purpose of the lichen community indicator is to use lichen species and communities as biomonitors of change in air quality, climate change and/or change in the structure of the forest community. Lichen communities are excellent indicators of air quality, partially long-term averages of sulfur dioxide concentrations.

Results and Conclusions Thus Far

The overall health of the forests of Alabama is good. In spite of the relative good health of the forests, a variety of insects and diseases and human-caused impacts continue to threaten the state's resource. The following is a list of some of those health indicators and their impact, both good and bad:

- The stand density has increased and the mean diameter of all trees also has increased. This shows the trees are growing—a healthy sign, but also the increased density of pine will increase the hazard to Southern pine beetle.
- The average number of snags per acre increased, which could provide for increased wildlife habitat.
- In general, crown densities are high. A high crown density equates to a greater amount of foliage that is pre sent for photosynthesis. An exception to this was Virginia and shortleaf pines, which had lower crown densi ties, and this lessening of "vigor" may have shown up as increased attack by the Southern pine beetle.
- Hardwoods had more recordable dam age than softwoods, with indicators of decay the most commonly recorded damage to hardwoods. The most com mon damages in loblolly pine were cankers and galls (fusiform rust).
- Ozone levels on the FHM plots were

nonexistent. There were, however, some levels detected on USFS ozone plots on National Forests. Ozone damage is not a problem in the forests of Alabama.

- Southern pine beetle continues to be the major problem for Alabama pines. In 1999 there were 56 counties with SPB infestations and 41 of those counties were epidemic. Statewide there were over 5,000 individual infested spots causing over $25 million in mortality.
- Dogwood anthracnose disease has killed the majority of the dogwoods in the forests located in elevations above 800 feet.
- Acid rain has not been found to be a problem in Alabama.
- The average acres burned and average size of fires continues to be reduced annually.

Summary

Forests are made up of stands of trees, whether pines or hardwoods. Although the forests as a whole are healthy, some stands within these forests are not healthy. As a rule, managed stands are healthy and unmanaged stands are not.

Unmanaged stands are those that the landowner harvests and regenerates naturally, letting trees come back that will sprout or seed in by themselves, or artificially, by planting seedlings in rows. Either way, nothing further is done until 25 to 30 years later when the stand is cut. These stands are rated "high hazard" for fire, Southern pine beetle, annosus root rot, fusiform rust, etc. The vast majority of mortality that occurs in the overall forests of Alabama is usually associated with these unmanaged stands.

Managed stands are those where the landowner has a written management plan on property that is harvested and regenerated by either natural or artificial means. But, unlike unmanaged stands, the owners install integrated pest management techniques. Hazard ratings are made on each stand and incorporated into the written plans. And as the rating of a stand begins to climb toward high classes, prevention techniques such as the following are taken:

- Firebreaks are made to prevent fires.
- Roads are planned in advance and kept open and grassed to allow access.
- When the fuel builds up, prescribed fire is used to reduce the fire hazard and at the same time increase wildlife habitat and food supply.
- When pine stands begin to close in on themselves and the Southern pine beetle hazard increases, the stands are thinned to reduce the beetle hazard.
- During thinning, the pines with fusiform rust are cut to reduce future infection.
- On sandy soils, annosus root rot prevention is used to save the remaining trees from infection.

When these managed stands of trees are combined into forests, that is when a landowner has a truly healthy forest. This comes about by planning, writing a forest management plan that speaks to not only the timber resource but to all the other resources—wildlife, water, air, aesthetics, soil, etc. The goal of most managed forests is to leave the land in better shape than it was found so future generations will be able to enjoy it.

In summary, the forests of Alabama are healthy and an early warning system is in place that will allow forest landowners to be proactive in keeping a world class forest resource.